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Foreign Ownership, Labour Mobility and Wages

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Abstract

There is a multitude of empirical research attempting to measure the effects of foreign direct investment, including the extent of spillovers from foreign owned to domestic firms. However, the mechanisms through which these spillovers occur have not received as much attention. One of the potential channels for spillovers of technological, marketing or managerial knowledge from foreign owned to purely domestic firms is labour mobility. Workers may benefit from such a spillover process if they manage to appropriate part of the return to the knowledge of the foreign owned firm. The ability to transfer knowledge and thereby benefit from it may depend on the skill level of an employee. This paper uses Finnish linked employer-employee panel data to analyse the extent to which employees benefit from knowledge they acquire in foreign owned firms and whether educational background makes a difference in this process. The possibility that employees may pay for the accumulation of this knowledge, as well as the potential for "reverse spillovers" i.e. knowledge diffusion from domestic to foreign owned firms are also considered. The estimates indicate that highly educated employees earn a return to prior experience in a foreign owned firm, over and above the return to other previous experience. These workers do not appear to pay for the accumulation of knowledge in the form of lower wages. The results do not indicate that foreign owned firms pay a premium for knowledge that workers bring with them from domestic firms.

JEL Classification: C23, J31, F23.

Keywords: FDI; Wages; Labour mobility; Spillovers; Linked employer-employee data

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1 Introduction

Spillover effects from foreign owned to domestic firms have been cited as one of the reasons behind recent policies designed to attract foreign direct investment (FDI). Foreign owned firms are claimed to have superior technological, marketing or managerial knowledge that may spill over to purely domestic firms. Potential channels for these spillovers include i) backward and forward linkages between foreign owned and domestic firms, ii) demonstration effects and iii) labour mobility. (Blomström and Kokko, 1998). Although there is a multitude of empirical research attempting to verify the magnitude of benefits of FDI, including the extent of spillovers from foreign to domestic firms, the mechanisms through which these spillovers occur have not received as much attention.

Spillovers from foreign owned to domestic firms have mostly been studied by examining the effect of the presence of a multinational company in an industry on the productivity of domestic firms. Most studies do not explicitly study the channels for these spillovers, and the evidence on the productivity effects of the presence of a multinational company is not conclusive (Barba Navaretti and Venables, 2004). The studies that do consider the mechanisms through which spillovers occur, focus mainly on backward and forward linkages between firms (e.g. Smarzynska Javorcik, 2004; Aitken and Harrison, 1999). Also in these studies the evidence on productivity spillovers is mixed.

Labour mobility as a channel for spillovers has hardly been studied, but recently there has been increased interest in the subject. Employees could be a source of spillovers if they acquire superior knowledge at a foreign owned firm and bring this knowledge with them to benefit their new employer when they change jobs. Recent papers by Görg and Strobl (2005) and Balsvik (2006) study spillover effects through labour mobility in Ghana and Norway respectively. Both find positive productivity effects when employees move from multinational firms to domestic firms in the same industry[1].

If employees at foreign owned firms accumulate knowledge that purely domestic firms do not possess but deem to be valuable, domestic firms may have an incentive to pay higher wages in order to attract these employees and obtain access to this knowledge.

[1] Görg and Strobl (2005) only consider employees who set up their own firm after leaving the multinational.

Higher earnings for employees with experience at a foreign owned firm would indicate that employees obtain a private return to knowledge accumulation or training in the foreign owned firm. If such a private return exists, models of human capital accumulation would imply that employees should pay for the opportunity to gain access to this knowledge, e.g. in the form of lower wages. In addition, transfer of technological or managerial knowledge between firms may require a certain skill level of the employee changing firms, which suggests that experience gained in a foreign owned firm may have different implications for highly educated individuals than for those with less education.

Martins (2005) and Balsvik (2006) find that employees with experience in multinational firms earn higher wages than their co-workers. Martins (2005), however, observes employees on average taking a pay cut, when moving from a foreign to a domestic firm, whereas Balsvik documents a pay rise upon mobility. Whether or not experience in foreign owned firms has a differing effect on employees with different educational backgrounds has, to the best of our knowledge, not been studied. When considering knowledge transfer from foreign owned to domestic firms through labour mobility, skill level can, however, be important. The issue of employees paying for the opportunity to accumulate knowledge in foreign owned firms has also not received attention.

The purpose of this paper is to study the mobility of employees between foreign and domestic firms and to examine whether employees are able to appropriate rents accruing to the potentially superior knowledge that foreign owned firms possess. In particular, the focus is on distinguishing between the effects of experience in foreign owned firms on the earnings of employees with high and low education. In addition, employees' earnings when they begin working at a foreign owned firm are studied to determine whether they are paying for this knowledge in the form of lower wages. Furthermore, spillovers can also occur from domestic to foreign firms, which could be the case e.g. if FDI were technology sourcing[2]. To take into this into account, both mobility from foreign to domestic and from domestic to foreign firms are studied.

The analysis is based on linked employer-employee panel data from Statistics Finland. The extensive data set consists of information on Finnish firms and workers in both services and manufacturing, and covers the period 1994 - 2002. Prior experience in a

[2] Driffield and Love (2003) study panel data on UK industries and find that such "reverse spillovers" exist. They do not, however, consider the mechanisms through which these spillovers arise.

foreign owned firm has a positive effect on earnings of the university educated, over and above the effect of other previous experience. These employees do not appear to pay in the form of lower wages for the knowledge they accumulate at foreign owned firms. Robust evidence of an additional return to experience gained in domestic firms for workers moving to foreign firms is not found.

The remainder of the paper is structured as follows. Section 2 presents a brief overview of the related theoretical and empirical literature. Section 3 describes the data used in the analysis. Section 4 outlines the empirical specification and presents the estimation results. Finally, Section 5 concludes.

2 Related literature

2.1 Theoretical background

Spillovers occur when domestic firms benefit from knowledge diffusing from foreign firms, and the foreign firms are not able to capture the full return to their knowledge. If knowledge is transferred from foreign to domestic firms through labour mobility, the extent of the spillover or externality is defined by the division of the costs and benefits of knowledge accumulation between the foreign owned firm, its employees, and the firms these employees move to. In addition to recent models of spillovers through labour mobility between multinational and domestic firms, this type of phenomenon can be thought of in the context of models of R&D spillovers and models of on-the-job training.

Fosfuri et al. (2001) and Glass and Saggi (2002) develop models of spillovers from multinationals to domestic firms through labour mobility. The models imply a trade-off between technological and pecuniary spillovers to the local economy. The trade-off arises through the multinational firm's choice between allowing technology transfer and preventing it by paying the worker a premium. Models of R&D spillovers through worker mobility, such as those of Pakes and Nitzan (1983), Gersbach and Schmutzler (2003) and Franco and Filson (2006), are similar in spirit and also provide a framework for thinking of spillovers from foreign owned to domestic firms. These models incorporate the fact that employees gain access to valuable knowledge, which may benefit them later in their career. On-the-job training models should also be considered in this context, as e.g. Rosen's (1972) model, where firms differ in terms of their on-the-job

training opportunities, provides hypotheses concerning the effect of human capital accumulation on earnings at different career stages.

There are several interesting hypotheses that arise from the theoretical framework described above. Firstly, if workers accumulate productivity enhancing transferable knowledge at the foreign owned firm, they would be expected to earn a return on this when moving to a domestic firm. This return will obviously depend on the extent to which wages are related to the marginal productivity of the worker. To the extent that wages are related to marginal productivity, returns to job mobility between foreign and domestic firms will also be indicative of productivity spillovers. With wage increases essentially having to be paid out of benefits from increased productivity, estimates of wage effects will provide a lower bound for potential productivity effects.

Secondly, in the context of knowledge accumulation in foreign owned firms and mobility from foreign to domestic firms, the models mentioned above imply that employees accept lower wages when they begin working for a foreign owned firm in order to get the opportunity to accumulate valuable knowledge that is not available in domestic firms. Once they have accumulated knowledge their earnings will have to increase corresponding to their value to other firms, but also as discussed in Rosen (1972), because there are less learning opportunities available in the foreign firm that the employees would be willing to pay for in the form of lower wages.

Thirdly, models of human capital accumulation, such as the Rosen (1972) model, incorporate the possibility that formal schooling may influence learning capacity and thereby the incentives for knowledge accumulation. Schooling may also be a relevant factor in the actual transfer of knowledge from foreign to domestic firms due to the type of knowledge that is presumed to be transferred. The literature on knowledge spillovers between multinational and domestic firms discusses various forms of knowledge that may be transferred, e.g. technological, managerial or marketing knowledge (Bellak, 2004; Markusen, 1995). These forms of knowledge imply that knowledge transfer may require a certain skill level of the employee moving from a foreign to a domestic firm.

Finally, the theoretical framework described above is based on workers moving from a firm with better possibilities for knowledge accumulation to firms where this knowledge is not available. If knowledge diffusion actually takes place from domestic to foreign

firms, workers would be expected to benefit from mobility in this direction. The next section discusses previous empirical evidence related to these issues.

2.2 Previous empirical research

Empirical evidence on knowledge spillovers from foreign to domestic firms through worker mobility is scarce. Using data from Ghana, Görg and Strobl (2005) study productivity of firms run by owners who previously worked at multinational companies. As mentioned above, they find positive productivity effects compared to domestic firms when workers established a company in the same industry as their previous employer. Balsvik (2006) studies Norwegian manufacturing firms, and finds that employees who move from multinational to purely domestically owned firms have a positive effect on total factor productivity. Employees with experience in multinational firms also earn higher wages than their co-workers, but the productivity effect of the increased share of workers with experience in multinational firms is larger than the effect that experience in multinational firms has on employees' wages.

Martins (2005) studies knowledge spillovers from foreign owned to domestic firms indirectly by examining wages of employees moving from foreign owned to domestic firms. He finds that employees with experience in foreign owned firms earn more than their colleagues in domestic firms, but that workers still suffer sizeable pay cuts when moving from foreign to domestic firms. The results indicate that although there is some evidence that labour mobility may be a source of knowledge transfer, there is a great deal of mobility from foreign to domestic firms that is not consistent with this idea. Malchow-Møller et al. (2007) also study a similar issue by considering the effect of experience in large vs. small plants arguing that multinationals and large firms share relevant characteristics. They find that employees with prior experience in large plants earn a wage premium.

Positive productivity spillovers could also imply that wages increase across the board in domestic firms, i.e. the wage effect is not restricted to the worker moving from a foreign owned to a domestic firm. Such an effect could also be observed without actual spillovers, if foreign firms pay higher wages on average and domestic firms competing in the same labour market have to pay higher wages to attract workers as a consequence of this. In a study using cross section data, Aitken et al. (1996) find evidence that the presence of foreign owned firms leads to positive wage spillovers to domestic firms in

the US, but in Mexico and Venezuela such spillovers are not found. Lipsey and Sjöholm (2004) also use cross section data and find that a foreign presence in a sector has a positive effect on wages in domestic firms in that sector. Girma et al. (2001) use British panel data and find no effect of a foreign presence on wage levels in domestic firms. They do, however, find some evidence of a negative effect on wage growth. Andrews et al. (2007) study the wage effects of foreign ownership and find evidence that workers who leave domestic plants to join foreign owned plants gain increases in wages, whereas workers moving from foreign owned to domestic firms do not experience a significant wage change, implying that the wage effects of foreign ownership spill over into the domestic economy.

In the general context of knowledge transfers, spillovers from foreign owned to domestic firms are also related to R&D spillovers. Empirical evidence on R&D spillovers through labour mobility is provided by, among others, Almeida and Kogut (1999) who study the mobility of patent holders between firms. They find that labour mobility does influence the transfer of knowledge and that the flow of knowledge seems to be embedded in regional labour networks. Møen (2005) studies R&D spillovers empirically in a human capital framework. He shows that workers pay for the possibility to accumulate knowledge in R&D intensive firms by accepting lower wages early in their career. The return to these implicit investments is obtained later on, when wage increases reflect the increased value of their knowledge. Møen points out that these results indicate that markets, to some extent, internalize the potential externalities created by labour mobility.

Considering experience accumulated at a foreign owned firm from the point of view of on-the-job training, relevant empirical research indicates that a large share of employer provided training is general and transferable (Loewenstein and Spletzer, 1999) and that employees do not directly nor indirectly pay for the training they receive (Lynch, 1992; Loewenstein and Spletzer, 1998; Barron et al., 1999). Loewenstein and Spletzer (1998) find, in addition, that completed spells of general training provided by a previous employer have a larger effect on earnings than completed spells of general training provided by the current employer.

The empirical evidence cited above indicates that labour mobility may be a channel for knowledge diffusion, and in some cases employees appear to benefit from the knowledge transfer process in terms of higher earnings. Evidence on knowledge diffusion from

foreign owned to domestic firms and the extent to which employees are able to appropriate rents to this knowledge is, however, limited.

3 Data

This study uses a data set from Statistics Finland that links information on employers, i.e. firms and plants, and their employees. The data set is formed by linking data from various Statistics Finland databases: Finnish Longitudinal Employer-Employee Data, Business Register, Industrial Statistics, Financial Statements Statistics. The data set is based on a 1/3 sample of individuals that were 16 to 69 years old in 1990. They are followed to year 2002 and the sample is extended each year by adding a 1/3 sample of 16 year old persons. The data set contains extensive information on individuals' characteristics including details on education, family, labour market situation, income and so forth. The firm and plant level variables include information on industry, ownership, economic activity etc. Information on the employer is linked to each individual based on the employer at the end of the year. Because of confidentiality, some of the firm level information is in the form of classified variables (e.g. size classes), growth rates (e.g. employment growth), plant averages (e.g. average age of employees), or binary variables (e.g. ownership status). These data are collected for all available years on all firms and plants that employ at least one individual in the sample.

Information on foreign ownership is available from 1994 onwards, which is not a severe restriction considering that foreign ownership in Finland was scarce before this time due to strict regulations that were not abolished until 1992 (Golub, 2003). The data set used in this study extends from 1994 to 2002 and includes individuals who can be linked to a plant in every year following their first appearance in the data. This basically restricts the sample to the private sector. To enable the analysis of mobility, only individuals who can be followed for at least three years are included. The data set thus consists of 198 266 individuals who work in 80 216 different plants, which amounts to a total of 1 899 870 person year observations.

In addition, the sample is restricted to include only individuals who are employed at least six months every year from the time they are first included in the sample. This implies that the included individuals have a reasonably strong attachment to the labour market and may help to avoid confounding effects of elongated spells of non-employment with the effects of different types of work experience. The effects of experience in foreign

owned firms on labour market outcomes other than earnings would, of course, be an interesting topic in itself but is beyond the scope of this paper. 95 percent of the included individuals are employed for 12 months every year, which roughly ensures that job moves are voluntary, as discussed in Manning (2003). Since the objective is to study mobility from foreign to domestic firms as a source of knowledge spillovers, voluntary job moves are the focus of attention.

The data are checked for and cleared of observations with missing ownership indicators and discrepancies in other key variables. In addition a lower bound of 500 euros for monthly wages is also imposed. Following these amendments the data set consists of 136408 individuals, of whom approximately 72% are observed in all nine years. These individuals work in 49 408 different plants. The total number of person-year observations in the restricted sample is 1072 139.

In this study a job is defined as an employee-plant match and job mobility is defined by combining information on the start date of employment and information on changes in an individual's plant and firm codes. This combination of information is used to ensure as accurate a measure of job mobility as possible and to avoid problems related to renewal of employment contracts with the same employer on the one hand and administrative changes in plant and firm codes on the other. Basically a worker is classified as having changed jobs if he/she has both changed plants and started a new employment contract during the year. In addition, this measure of job mobility is corrected so that if a worker's firm code does not change, i.e. if the worker moves from one plant to another in the same firm, he/she is not classified as a mover. Plant codes are used as the basis of identifying job mobility because they have been found to be more stable and less subject to administrative changes than firm codes in this data set. The adjustment using information on continuous employment contracts and unchanged firm codes should minimize the classification of plant changes within the same company as job changes. Obviously a worker could have changed jobs several times during the year, but the data enable only the determination of the start date of the latest employment contract, and the plant and firm codes are based on the last week of the year.

Foreign ownership is defined on the basis of ultimate beneficiary owner (UBO) and a 20 % threshold is used in classifying a plant as foreign owned. It has been suggested in the literature, that the focus should actually be on the comparison of multinational and non-

multinational firms, rather than foreign owned and domestic firms (e.g. Bellak, 2004). Unfortunately, there is no reliable indicator of multinational status in the data set for this period, so the analysis will be based on comparing foreign owned and domestic owned firms.

Table 1 shows the number of employees in foreign and domestic plants annually. The steady rise in the share of employees working in foreign owned plants is consistent with the increase in foreign ownership following the abolition of restrictions on FDI (see Ilmakunnas and Maliranta, 2004). The mobility of employees between these plants is documented in Table 2. Overall mobility is quite low, with the majority of job changes occurring between domestic owned plants. There is substantial mobility in 1995 most likely related to the aftermath of the severe recession in Finland. Mobility from foreign to domestic plants and especially from domestic to foreign plants increases relatively more than the total number of job changes, which is in line with the increase in the employment share of foreign owned plants.

[Table 1 & Table 2 here]

The purpose of this paper is to study how experience in foreign owned firms affects earnings in subsequent jobs. It may of course be that workers who have experience from foreign owned firms and are consequently hired to work for domestic firms differ in terms of other characteristics that affect earnings. Tables 3 and 4 show statistics for employee characteristics classified based on the nationality of the employee's current and previous employer. Due to the time span of the data, job mobility is only observed if it occurs after 1994. Partly for this reason, average tenure is significantly lower for those with prior experience at another firm. The average age is lower for those with prior experience, which, since only recent job moves are observed, is consistent with evidence that job mobility is more common among young workers. Average earnings are highest for those who currently work at a foreign owned firm and also have prior experience in a foreign owned firm. Based on these raw averages foreign ownership of the current firm is, however, not the only meaningful characteristic, as employees with experience from foreign firms who currently work at a domestic firm do not earn less on average than employees in foreign firms with prior experience only from domestic firms. As to education, foreign firms appear to recruit more educated workers. Both employees currently working at foreign firms and employees with experience in foreign firms are on

average more educated than employees with no previous experience or experience from only domestic firms.

[Table 3 & Table 4 here]

Table 5 documents changes in earnings following a job change. Employees seem to gain on average both from moving from a foreign to a domestic firm and from moving between domestic firms. The average wage gain is actually higher in relative terms for job changes between domestic firms, but the average real wage remains lower than that of employees who move from a foreign to another foreign or to a domestic firm.

[Table 5 here]

4 Estimation

To test the various hypotheses outlined in Section 2, we estimate wage equations for workers in domestic and foreign firms, and control for experience in different types of firms. This enables us to determine whether the return to previous experience in foreign owned firms differs from previous experience in purely domestic firms and whether there is a difference depending on what type of firm the worker moves to. We also take into account the fact that the effects may differ between employees with different educational backgrounds and seek to identify these potential differences. In addition, we analyse employees' earnings development in foreign owned firms to determine whether they pay for the opportunity to gain access to foreign owned firms' knowledge. Finally, we attempt to tackle the problem of potentially endogenous mobility and check the robustness of the results to the use of different specifications.

4.1 Empirical Specification

In order to examine the possibility that workers moving between foreign and domestic firms appropriate returns to knowledge acquired at their previous employer, earnings are regressed on measures of tenure at the previous job as well as interactions of this tenure with the nationality (domestic or foreign) of both their previous and current employer. In addition, to determine whether employees pay for the chance to gain experience at a foreign owned firm by accepting lower wages when they begin working there, the nationality of the current employer is controlled for, as well as its interaction with tenure

at the current employer. A large set of control variables is also included. The earnings effects of tenure at both the previous and current job are estimated as splines. In its simplest form, without the interaction terms, the specification can be written as:

$$
\begin{aligned}
\ln w_{it} = {} & X_{it}\beta_1 + \beta_2 tenure \times \mathbf{1}(0 \le tenure < 2) \\
& + \left[2\beta_2 + \beta_3 (tenure - 2)\right] \times \mathbf{1}(2 \le tenure < 5) \\
& + \left[2\beta_2 + 3\beta_3 + \beta_4 (tenure - 5)\right] \times \mathbf{1}(5 \le tenure < 10) \\
& + \left[2\beta_2 + 3\beta_3 + 5\beta_4 + \beta_5 (tenure - 10)\right] \times \mathbf{1}(tenure \ge 10) \\
& + \beta_6 prior\_tenure \times \mathbf{1}(0 \le prior\_tenure < 2) \\
& + \left[2\beta_6 + \beta_7 (prior\_tenure - 2)\right] \times \mathbf{1}(2 \le prior\_tenure < 5) \\
& + \left[2\beta_6 + 3\beta_7 + \beta_8 (prior\_tenure - 5)\right] \times \mathbf{1}(prior\_tenure \ge 5) \\
& + \mu_i + \gamma_t + \varepsilon_{it}
\end{aligned}
\qquad (1)
$$

where ln w_{it} is the log real monthly wage, X_{it} includes personal characteristics and firm characteristics, $\mathbf{1}(\cdot)$ denotes an indicator function, μ_i is a person specific fixed effect and γ_t is a time effect. The spline for current tenure has changing slopes at 2, 5 and 10 years of tenure and the spline for tenure at the previous employer has changing slopes at 2 and 5 years of prior tenure[3]. The interpretation of the coefficients is quite straightforward. For example, if β_2 is positive, earnings increase during the first years on a job. If β_3 is higher than β_2, the returns to tenure increase after the first two years and if β_3 is lower than β_2, the returns to tenure decrease after two years.

To determine whether workers earn a return to knowledge they accumulate at foreign owned firms, the variables measuring tenure at the previous employer are interacted with an indicator of foreign ownership of this previous employer. However, as discussed above, there is also the possibility of reverse spillovers, i.e. knowledge transfer from domestic to foreign firms, so this is controlled for by interacting previous tenure with an indicator of foreign ownership of the current firm (the firm that the employee moves to). Finally, to distinguish the effects mentioned above from effects of mobility between foreign owned firms, there is also an interaction of previous tenure with an indicator of foreign ownership of both the current and previous firm. This last interaction will capture returns to previous tenure for employees moving between foreign owned firms. To capture the possibility that workers accept lower wages in exchange for the opportunity

[3] With the data covering the years 1994 to 2002, the maximum amount of tenure at a previous employer is 8 years.

to accumulate knowledge at a foreign owned firm, tenure at the current firm is interacted with a dummy indicating foreign ownership of the current firm.

Work experience prior to the period for which data is available (1994) can not be determined, but age and education are used to control for potential work experience. Gender is also controlled for in all estimations. Plant level control variables include sales per employee, firm size, region, industry and an indicator of foreign ownership. In addition, an indicator is included for whether the firm that the individual worked for in the previous year reduced employment by 40% or more, and similarly for this period's employer. This aims to control for potentially involuntary job mobility. As discussed in Section 2, knowledge transfer may predominantly be related to mobility of the more educated. Therefore, model (1) is also estimated with interaction terms between university education and different types of experience.

Accumulated experience (both in domestic and foreign firms) may be correlated with individual characteristics that the employers are able to identify, but that are not available in the data. In addition, workers with experience from foreign owned firms may be different from workers with experience only in domestic firms e.g. if foreign firms have a more efficient screening process for new recruits. As the data set is a panel, the estimation can be done using individual fixed effects to control for these unobserved characteristics.[4] There is, however, also the potential problem of endogeneity of the foreign-domestic status of the firms which could arise e.g. if foreign firms only acquired the best performing firms in Finland which may also pay higher wages. Due to the number of plants in the data set, estimating the model with both person and plant fixed effects is not currently feasible for us using standard software such as Stata and SAS. However, we apply a recently developed programme enabling the inclusion of a large number of dummy variables[5] to a subset of the data to control for plant effects.

It is also important to note that there may be some process whereby job mobility in itself is a way of achieving higher earnings, as detailed in the job mobility literature (e.g.

[4] The amount of previous experience is constant within each job spell and changes each time an individual changes jobs. Therefore, only individuals who have changed jobs have previous experience and these individuals are observed before and after the job change, so the effect of previous experience is identified also in the fixed effects estimation.

[5] The estimations are done using a Stata implementation of memory saving estimation of the fixed effects least squares dummy variable regression (felsdvreg) developed by Thomas Cornelißen. The method is described in Cornelißen (2006).

Manning, 2003). Therefore, prior experience may be endogenous in the earnings equation, as the potential for achieving a higher wage is likely to be one of the determinants of job mobility. To control for this, we would need an instrument for previous experience, and this is unfortunately currently unavailable. Controlling for plant fixed effects in addition to person fixed effects should alleviate the problem somewhat, and we also attempt to control for endogenous job mobility by using displaced workers. Various robustness checks are also done to check that the chosen functional form and the experience measure used are not driving the results. Details are in the next section. To take into account the fact that the data set is a panel and observations for a given individual in consecutive years are unlikely to be independent, we use robust standard errors that allow for correlation among observations for an individual in different years.

4.2 Estimation results

4.2.1 Returns to previous experience

The results for the estimation of model (1) with interaction terms added are presented in Table 6. The first column shows the results of an OLS regression. In the first section of the table the coefficients on previous tenure imply a return of about 5% to the first years of tenure accumulated at the previous employer with lower returns of about 1% to previous tenure exceeding two years. Because the estimation includes interactions of previous tenure with previous and current employers' nationalities, the coefficient on previous tenure alone indicates returns to previous tenure for employees moving between domestically owned firms. The interaction of tenure at the previous employer with the nationality of that employer implies that there is an additional return of just under 4% for the first two years of tenure at a foreign firm if a worker subsequently moves to a domestic firm, with an even higher additional return to previous tenure if both the previous and current employers are foreign. However, as noted above, there may be unobserved characteristics that are correlated with the measure of accumulated experience which may affect these results. To eliminate the unobserved effects, model (1) is estimated using individual fixed effects. The results of this estimation are presented in column (2) of Table 6.

[Table 6 here]

The fixed effects estimates indicate an even higher return to previous tenure for employees moving between domestic firms and an additional positive effect of 2.5% per year for the first two years of tenure from a foreign firm. There is also an additional positive effect for those moving to foreign firms. In all these cases the effects beyond two years of previous tenure are not significant. These results could be interpreted in the context of the Loewenstein and Spletzer (1998) model, where employees do not realize the full return to training until they change jobs. Balsvik also finds broadly similar results for Norwegian manufacturing, although in her case there is no additional return to previous tenure at a domestic firm for employees moving to multinational firms. The results may, however, be an indication of endogenous job mobility, as described above. We return to this issue later. First, we redo the estimations taking into account the educational background of the employees who change jobs, and find that the results above are altered.

It was argued above that if there are knowledge spillovers from foreign owned to domestic firms through worker mobility, they may be predominantly the result of educated workers changing firms. Columns (3) and (4) of Table 6 show results for estimation of the same OLS and fixed effects models respectively, but including interactions between the experience variables and a dummy for having completed a university degree. Focusing on the fixed effects estimates in column (4), previous tenure again has a positive and significant effect on earnings for all employees, but there is no difference between the returns to previous tenure at foreign and domestic firms, apart from a negative effect of more than 2 years of previous tenure for employees moving between foreign firms. University education affects the return to previous tenure by increasing the return to the first couple of years of previous tenure, but this additional return decreases somewhat for previous tenure exceeding two years.

The actual coefficients of interest are, however, those on the interactions between the nationality of the previous employer and tenure at that employer for workers with a university education. For the university educated there is an additional return of approximately 3% to the first years of previous tenure at a foreign firm. The additional effects of previous tenure for university educated employees moving from domestic to foreign or from foreign to foreign firms do not differ from the effects of previous tenure for educated workers moving between domestic firms. This would imply that there is something different about mobility of educated workers from foreign to domestic firms,

compared to other types of mobility. This finding is interesting in various respects. Firstly, this type of result is consistent with the view that knowledge transfer depends on the skill level of the employee. Secondly, the fact that it is mobility from foreign to domestic firms and not in the opposite direction that appears to be beneficial in terms of earnings, implies that it is experience that educated employees acquire in foreign forms that is valued in domestic firms and not vice versa. This is consistent with evidence that foreign owned firms outperform purely domestic firms (e.g. Bellak, 2004; Ilmakunnas and Maliranta, 2004 for Finland).

As mentioned above the positive earnings effects of previous tenure can be related to endogenous job mobility. To some extent this problem may be alleviated by the inclusion of plant fixed effects in addition to person fixed effects, but the software restrictions discussed earlier prohibit including plant dummies for the entire data set. However, we are able to redo the estimations including plant fixed effects for a reasonably sized subsample of the data. As previous experience in foreign owned firms appears to primarily have an effect on the earnings of the highly educated, we restrict the estimation to those with a university education. As this does not reduce the number of plants sufficiently, we further restrict the analysis to manufacturing plants. This leaves us with 18 080 individuals who are employed in 4359 different plants, giving a total 108 191 person years. Estimating model (1) for this group including plant fixed effects and interactions of the tenure variables with nationality of the previous and current employer gives results that are consistent with those reported above[6], implying that the plant level controls we included in our earlier estimations work reasonably well in controlling for differences between plants. Further ways of alleviating the problem of endogenous job mobility will be discussed later.

4.2.2 Do workers pay for knowledge accumulation?

If employees are able to reap returns to the knowledge they accumulate in foreign owned firms, the models of R&D spillovers and on-the-job training mentioned above imply that this should show up in the form of lower wages while working (or starting to work) for the foreign firm. Looking at the fixed effects results in column (2) of Table 6, the coefficient on the foreign ownership dummy for the current employer is not statistically significant, and the returns to tenure actually appear to be slightly higher in foreign than

[6] Results not shown, available on request.

in domestic firms. This is also the case when adding the interactions with university education to the fixed effects estimation (column 4), with the returns to tenure for the university educated in foreign owned firms being higher than for those in domestic firms and also higher than the returns to tenure of other employees in foreign owned firms[7]. Employees do, therefore, not appear to pay in the form of lower earnings for the possibility to accumulate knowledge at foreign owned firms. This indicates that in addition to a return to prior experience in foreign owned firms, educated workers also appear to earn a return to the knowledge they have accumulated already when working at the foreign owned firm. This would be in line with the theoretical framework described earlier, where wages increase to reflect the accumulation of valuable knowledge.

The small foreign ownership effect is consistent with recent evidence that the foreign ownership wage premium often found in studies may be due to poor data and methods (e.g. Martins, 2006 and Heyman et al., 2004.). Proper estimation of this effect would require further refinements here as well. The fact that there does not appear to be a pure foreign ownership affect but the returns to tenure for the university educated in foreign owned firms appear higher than those in domestic firms would also imply that it is the accumulation of some sort of human capital in foreign owned firms that is the key element.

To analyse in more detail whether employees accept wage discounts when entering foreign firms, we also conduct the estimation using data on a single cohort of university graduates. Earnings equations for the years 1994 to 2002 are estimated for individuals who obtained a university degree in 1993[8], i.e. their initial years in the labour market are documented in full. No wage discount when entering foreign owned firms is, however, observed.

4.2.3 Returns to previous experience for displaced workers

The results above indicate that employees may accumulate knowledge that is not available in domestic firms when working at a foreign firm and be able to appropriate some of the return on this knowledge when moving to a domestic firm. As noted above, however, there may be some process whereby job mobility in itself is a way of achieving

[7] This is in line with Huttunen's (2007) finding that following foreign acquisition wages rise more rapidly for highly educated than less educated employees.
[8] Only those who were under 30 years old in 1993 are included in order to ensure as well as possible that they are actually entering the labour for the first time.

higher earnings. This would mean that prior experience is endogenous in the earnings equation and could be one explanation behind the positive wage effects for prior experience documented above. Controlling for plant fixed effects, as was done above, can reduce the problem to some extent, but to properly control for endogenous mobility we would need an instrument for previous experience, and this is unfortunately currently unavailable[9].

In order to try to correct for the possible endogeneity we do, however, estimate wage equations for individuals who either stay at their job during the whole observation period or move to a new job only in connection with a significant (greater than or equal to 40%) reduction in their employer plant's labour force. So the "stayers" work in a foreign or domestic firm continuously, and the "movers" leave their employer for a new job at another firm. Significant employment reduction is one of the definitions of displacement used in the literature (e.g. Bender et al., 2002) and is designed to include those individuals who leave the firm because they foresee the plant closure or are dismissed as the firm downsizes prior to closure. The measure may, however, also include employees who leave the firm for other reasons. Most of these workers are in any case likely to be changing jobs involuntarily, which will control for the bias caused by endogenous mobility. However, as we are mostly interested in knowledge transfer and returns to knowledge transfer by labour mobility could be argued to primarily materialize when firms actively seek employees with useful knowledge, displaced workers may not be ideal for studying this issue.

To avoid excluding displaced workers who take some time finding a new job, the sample is extended to include employees who are employed for at least one month in each year, as opposed to the minimum of six months above. In order to be able to match the employees to a plant, all the included individuals are employed at the end of the year. As the primary question of interest here is the effect of experience in a foreign owned firm on subsequent wages, the sample is restricted to workers who find a new job rapidly after leaving their old job, and the effects on the length of unemployment etc. are not studied. This is an area for further research. The sample to be used in estimation includes a total of 1 128 961 person year observations with 143 178 workers who do not change jobs and

[9] Abowd et al. (2006) study mobility and wages using linked employer-employee data and use two kinds of exclusion variables in the mobility equation: one related to individual heterogeneity with respect to previous employment spells and the other describing the position of the worker in the age distribution at entry to the firm. Unfortunately, similar exclusion restrictions are not available for our analysis.

3 732 workers who change jobs in connection with a significant (≥ 40%) reduction in employment at their plant. 361 of the workers who change jobs leave a foreign firm. We estimate the same specification as above for the original data set with the splines for current and previous tenure structured in the same way. Here, however, previous tenure will only be greater than zero for employees who leave their job in connection with plant downsizing.

The results are shown in Table 7, where column (1) displays the OLS estimates and column (2) the estimates including individual fixed effects. Even for this group of workers, the first few years of tenure at the previous job have a positive and significant effect on earnings. Previous tenure above two years does not have a statistically significant effect, and the return to previous tenure does not differ between employees moving between firms with different ownership. Columns (3) and (4) of Table 7 show results of OLS and fixed effects estimations respectively including interaction terms between the variables measuring previous experience and a dummy for having obtained a university degree. With this specification, previous tenure at a foreign firm has an additional positive effect on earnings of approximately 5% as compared to employees with prior experience from a domestic firm, but this effect does not differ for different education groups like in our earlier estimations. Similar to the earlier estimations, a university degree implies an additional positive effect of previous experience on earnings. The low number of individuals who change jobs may affect the precision of the results, but these findings indicate that the positive effect of previous experience observed in our earlier estimations is not purely due to endogenous job mobility, and there appear to be some returns to accumulated knowledge that are not realised until changing jobs.

Off the topic of endogenous job mobility, the results in column (4) of Table 7 indicate that for this group of workers there is an initial foreign ownership wage premium for employees without a university education, but that this effect decreases during the first years on the job. On the other hand, for university educated employees there is hardly any initial earnings effect (taking into account the direct effect and the interaction with the education dummy), but the returns to tenure in the first years are higher than for employees in domestic firms. These results may, obviously, be influenced by the construction of the sample.

4.2.4 Robustness checks

This section analyses the robustness of the results presented above to the use of different specifications. First, in order to examine the effect of the choice of experience measure and functional form of the empirical specification on the results, we consider alternatives for both[10]. The first modification uses a cubic in previous and current tenure instead of estimating the effects as splines. The results are consistent with those above. In addition, an experience measure incorporating previous experience from not only one employer but all previous employers observed after 1994 is used. The results are, again, similar to those above, which may be expected as we are only able to use data from 1994 onwards. This polynomial regression is also run using an experience measure incorporating both previous experience and current tenure, i.e. tenure is included both in the experience variable and as a separate regressor. This commonly used form of the wage regression also yields results consistent with those above. Finally, to take into account the fact that the distribution of previous tenure is restricted by experience only being measured from 1994 onwards, the model was also estimated from 1998 onwards using experience data starting in 1994. The results are also robust to this change.

5 Conclusions

The purpose of this study was to ascertain whether workers are able to appropriate rents to the potentially superior knowledge possessed by foreign owned firms when moving to a domestic firm and, in particular, whether this is related to different educational backgrounds of the workers. The analysis shows that previous tenure in a foreign owned firm has a positive effect on earnings of the university educated, over and above the effect of other previous experience. These findings are consistent with models of knowledge diffusion through labour mobility, where a domestic firm may bid for a worker at a foreign owned firm in order to gain access to her knowledge. The results are also in line with the view that if there is knowledge transfer from foreign owned to domestic firms it may require a certain skill level of the employee changing jobs.

The results indicate that workers do not pay in the form of lower wages for the knowledge they accumulate at foreign owned firms, and that educated workers appear to earn a return to the knowledge they have accumulated already when working at the foreign owned firm. These findings are in line with models of human capital

[10] Results not shown, available on request.

accumulation. Further research on the development of employees' productivity both during and after working for a foreign firm is needed in order to assess how the returns to the potentially superior knowledge in foreign owned firms are actually distributed.

An important issue to keep in mind in this type of study is the problem of potentially endogenous job mobility. When attempting to control for this by studying the earnings of workers who leave their job in a time of significant employment reduction, the results indicate that workers do earn a return to knowledge accumulated at previous jobs even when they change jobs involuntarily. The results for this sample of workers indicate an additional positive effect of experience in a foreign owned firm on average, with no difference for the university educated. If employees with experience at foreign owned firms have accumulated valuable knowledge, this may also show up in other labour market outcomes, e.g. employment probabilities. Studying these effects is therefore a natural extension of the current study.

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Tables

Table 1 Employees by firm ownership

	Domestic	% of all employees	Foreign	% of all employees	Total
1994	88 208	91 %	8 689	9 %	96 897
1995	91 858	91 %	9 570	9 %	101 428
1996	95 039	89 %	11 187	11 %	106 226
1997	99 451	89 %	12 876	11 %	112 327
1998	103 871	87 %	15 410	13 %	119 281
1999	108 296	85 %	18 460	15 %	126 756
2000	114 826	84 %	21 582	16 %	136 408
2001	113 283	83 %	23 125	17 %	136 408
2002	111 854	82 %	24 554	18 %	136 408
Total	926 686	86 %	145 453	14 %	1 072 139

Table 2 Number of job changes by firm ownership

	From domestic to domestic	% of all employees	From domestic to foreign	% of all employees	From foreign to domestic	% of all employees	From foreign to foreign	% of all employees	Total	% of all employees
1995	5302	5.23 %	257	0.25 %	177	0.17 %	71	0.07 %	5807	5.73 %
1996	1928	1.81 %	269	0.25 %	196	0.18 %	82	0.08 %	2475	2.33 %
1997	2435	2.17 %	354	0.32 %	270	0.24 %	130	0.12 %	3189	2.84 %
1998	3186	2.67 %	560	0.47 %	383	0.32 %	151	0.13 %	4280	3.59 %
1999	3459	2.73 %	559	0.44 %	545	0.43 %	229	0.18 %	4792	3.78 %
2000	3514	2.58 %	593	0.43 %	566	0.41 %	253	0.19 %	4926	3.61 %
2001	3946	2.89 %	680	0.50 %	574	0.42 %	254	0.19 %	5454	4.00 %
2002	2519	1.85 %	336	0.25 %	374	0.27 %	142	0.10 %	3371	2.47 %
Total	26289	2.45 %	3608	0.34 %	3085	0.29 %	1312	0.12 %	34294	3.20 %

Table 3 Characteristics of employees by type of recent work experience

	No previous experience		
	Obs	Mean	Std. Dev.
Age	846 491	40.94	10.15
Female	846 484	0.33	0.47
Tenure (years)	843 253	13.08	9.42
Real monthly earnings (2002 euros)	845 655	2460	1209

	Previous employer domestic and current employer domestic		
	Obs	Mean	Std. Dev.
Age	102 864	37.72	9.59
Female	102 864	0.25	0.43
Tenure (years)	101 841	2.76	2.61
Real monthly earnings (2002 euros)	102 744	2527	1188
Tenure at previous firm	102 864	1.91	2.17

	Previous employer foreign and current employer domestic		
	Obs	Mean	Std. Dev.
Age	9 643	36.01	8.93
Female	9 643	0.30	0.46
Tenure (years)	9 548	2.13	2.09
Real monthly earnings (2002 euros)	9 600	3027	1666
Tenure at previous firm	9 643	2.34	2.55

	Previous employer domestic and current employer foreign		
	Obs	Mean	Std. Dev.
Age	12 148	34.39	8.61
Female	12 148	0.31	0.46
Tenure (years)	12 029	2.47	2.96
Real monthly earnings (2002 euros)	12 126	2895	1522
Tenure at previous firm	12 148	2.26	2.43

	Previous employer foreign and current employer foreign		
Age	4 096	37.33	8.90
Female	4 096	0.32	0.47
Tenure (years)	4 058	2.19	2.40
Real monthly earnings (2002 euros)	4 070	3802	2107
Tenure at previous firm	4 096	2.49	2.87

Table 4 Education of employees by type of recent work experience

	No previous experience	
Education	Frequency	Percent
Comprehensive school	225890	26.69
Secondary education	383899	45.35
Bachelor's degree	193300	22.84
Master's or PhD	43402	5.13
Total	846491	100

	Previous employer domestic and current employer domestic	
Education	Frequency	Percent
Comprehensive school	22988	22.35
Secondary education	48623	47.27
Bachelor's degree	24478	23.80
Master's or PhD	6775	6.59
Total	102864	100

	Previous employer foreign and current employer domestic	
Education	Frequency	Percent
Comprehensive school	1049	10.88
Secondary education	3574	37.06
Bachelor's degree	3424	35.51
Master's or PhD	1596	16.55
Total	9643	100

	Previous employer domestic and current employer foreign	
Education	Frequency	Percent
Comprehensive school	1292	10.64
Secondary education	4931	40.59
Bachelor's degree	4295	35.36
Master's or PhD	1630	13.42
Total	12148	100

	Previous employer foreign and current employer foreign	
Education	Frequency	Percent
Comprehensive school	368	8.98
Secondary education	1161	28.34
Bachelor's degree	1843	45.00
Master's or PhD	724	17.68
Total	4096	100

Table 5 Wage changes following job change

	From domestic to domestic firm			**From foreign to domestic firm**		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Real monthly earnings before (2002 euros)	26275	2064	1112	3078	2743	1858
Real monthly earnings after (2002 euros)	26275	2480	1341	3078	2855	1693
Change in real monthly earnings	26275	27.3 %	49.6 %	3078	12.9 %	44.2 %

	From domestic to foreign firm			**From foreign to foreign firm**		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Real monthly earnings before (2002 euros)	3607	2316	1459	1306	3210	1988
Real monthly earnings after (2002 euros)	3607	2541	1365	1306	3503	2070
Change in real monthly earnings	3607	19.4 %	42.2 %	1306	16.7 %	41.0 %

Table 6 Wage effects of experience in different types of firms

	(1)	(2)	(3)	(4)
Effects of tenure at previous employer for all employees				
Previous tenure less than 2 years	0.053	0.091	0.058	0.066
	(25.27)**	(41.93)**	(24.34)**	(25.69)**
Previous tenure between 2 and 5 years	0.009	-0.001	-0.003	0.007
	(3.69)**	(0.430)	(1.020)	(2.55)*
Previous tenure over 5 years	0.013	0.002	0.015	0.003
	(2.44)*	(0.440)	(2.63)**	(0.670)
Previous employer foreign				
x Previous tenure less than 2 years	0.038	0.025	0.012	0.002
	(6.73)**	(5.00)**	(1.580)	(0.360)
x Previous tenure between 2 and 5 years	0.012	0.000	0.024	0.005
	(1.540)	(0.020)	(2.37)*	(0.590)
x Previous tenure over 5 years	0.007	-0.014	0.006	-0.006
	(0.390)	(1.110)	(0.260)	(0.370)
Current employer foreign				
x Previous tenure less than 2 years	0.006	0.020	-0.014	0.016
	(1.020)	(4.40)**	(2.04)*	(1.820)
x Previous tenure between 2 and 5 years	0.009	0.003	0.017	0.005
	(1.350)	(0.510)	(1.960)	(0.770)
x Previous tenure over 5 years	0.006	0.000	0.008	0.002
	(0.400)	(0.010)	(0.410)	(0.120)
Current and previous employer foreign				
x Previous tenure less than 2 years	0.067	0.018	0.075	0.024
	(5.72)**	(2.00)*	(4.02)**	(1.850)
x Previous tenure between 2 and 5 years	-0.037	-0.022	-0.055	-0.038
	(2.36)*	(1.920)	(2.41)*	(2.46)*
x Previous tenure over 5 years	0.021	0.026	0.042	0.040
	(0.580)	(1.170)	(0.820)	(1.280)
Effects of tenure at previous employer for the university educated				
University education				
x Previous tenure less than 2 years			-0.014	0.070
			(3.26)**	(15.08)**
x Previous tenure between 2 and 5 years			0.035	-0.024
			(6.28)**	(4.73)**
x Previous tenure over 5 years			-0.001	0.002
			(0.110)	(0.190)
x Previous employer foreign				
x Previous tenure less than 2 years			0.054	0.029
			(4.91)**	(2.92)**
x Previous tenure between 2 and 5 years			-0.033	0.003
			(2.12)*	(0.200)
x Previous tenure over 5 years			0.004	-0.019
			(0.110)	(0.730)
x Current employer foreign				
x Previous tenure less than 2 years			0.047	-0.017
			(4.26)**	(1.880)
x Previous tenure between 2 and 5 years			-0.026	-0.002
			(1.880)	(0.170)
x Previous tenure over 5 years			0.002	0.001
			(0.060)	(0.040)
x Current and previous employer foreign				
x Previous tenure less than 2 years			-0.034	-0.015
			(1.400)	(0.840)
x Previous tenure between 2 and 5 years			0.047	0.035
			(1.490)	(1.580)
x Previous tenure over 5 years			-0.035	-0.023
			(0.480)	(0.520)

Table continues on next page

Table 6 Continued

Effects of tenure at current employer for all employees				
Current employer foreign	-0.019	-0.007	-0.013	-0.009
	(2.52)*	(1.060)	(1.380)	(1.120)
Current employer foreign				
x Tenure less than 2 years	0.027	0.007	0.028	-0.005
	(6.70)**	(2.05)*	(5.51)**	(1.100)
x Tenure between 2 and 5 years	0.014	0.008	0.012	0.010
	(6.83)**	(5.28)**	(4.96)**	(5.52)**
x Tenure between 5 and 10 years	-0.003	-0.005	-0.009	-0.007
	(2.42)*	(6.03)**	(6.70)**	(8.11)**
x Tenure over 10 years	-0.001	-0.001	-0.001	0.000
	(4.30)**	(3.96)**	(2.69)**	(2.19)*
Effects of tenure at current employer for the university educated				
University education				
x Current employer foreign			-0.013	0.024
			(0.880)	(1.930)
x Current employer foreign				
x Tenure less than 2 years			-0.004	0.025
			(0.580)	(4.14)**
x Tenure between 2 and 5 years			0.004	-0.006
			(0.950)	(2.27)*
x Tenure between 5 and 10 years			0.016	0.007
			(6.50)**	(4.25)**
x Tenure over 10 years			0.001	-0.003
			(0.930)	(6.37)**
Person fixed effects	No	Yes	No	Yes
Observations	918251	918251	918251	918251
R-squared	0.47	0.18	0.47	0.19
Number of individuals		136389		136389

Notes

1. The dependent variable is log real monthly earnings

2. Coefficients on the following variables are not reported: tenure, age (models 1 and 3), education dummies (models 1 and 3), gender dummy (models 1 and 3), time dummies, regional dummies, industry dummies, dummy for decreasing firm employment, firm size, sales/employee.

3. Robust t statistics in parentheses: * significant at 5%; ** significant at 1%

4. The R-squared reported for models 2 and 4 are for the "within-tranformed" estimation. Corresponding R-squared for these models estimated with individual dummy variables are 0.90 for both models.

Table 7 Wage effects of experience gained prior to displacement

	(1)	(2)	(3)	(4)
Effects of tenure at previous employer for all employees				
Previous tenure less than 2 years	0.034	0.051	0.029	0.035
	(6.19)**	(7.29)**	(4.65)**	(4.20)**
Previous tenure between 2 and 5 years	0.009	0.005	0.013	0.013
	(1.410)	(0.760)	(1.870)	(1.640)
Previous tenure over 5 years	0.037	0.011	0.017	0.003
	(2.97)**	(1.100)	(1.340)	(0.230)
Previous employer foreign				
x Previous tenure less than 2 years	0.035	0.022	0.043	0.052
	(1.770)	(1.170)	(1.790)	(2.35)*
x Previous tenure between 2 and 5 years	0	-0.028	-0.026	-0.049
	(0.010)	(1.340)	(0.740)	(1.780)
x Previous tenure over 5 years	-0.029	0.022	-0.017	0.006
	(0.470)	(0.540)	(0.220)	(0.120)
Current employer foreign				
x Previous tenure less than 2 years	-0.016	0.007	-0.032	-0.007
	(1.100)	(0.590)	(1.710)	(0.430)
x Previous tenure between 2 and 5 years	0.041	0.027	0.033	0.02
	(2.28)*	(1.720)	(1.400)	(0.990)
x Previous tenure over 5 years	-0.063	-0.024	-0.018	0.034
	(1.510)	(0.710)	(0.370)	(0.870)
Current and previous employer foreign				
x Previous tenure less than 2 years	0.012	-0.015	0.018	-0.034
	(0.300)	(0.410)	(0.380)	(0.760)
x Previous tenure between 2 and 5 years	-0.01	0.016	-0.014	0.029
	(0.200)	(0.420)	(0.250)	(0.600)
x Previous tenure over 5 years	0.017	-0.07	0.027	-0.095
	(0.150)	(0.960)	(0.240)	(1.120)
Effects of tenure at previous employer for the university educated				
University education				
x Previous tenure less than 2 years			0.014	0.046
			(1.220)	(3.12)**
x Previous tenure between 2 and 5 years			-0.014	-0.023
			(0.960)	(1.460)
x Previous tenure over 5 years			0.077	0.041
			(2.35)*	(1.570)
x Previous employer foreign				
x Previous tenure less than 2 years			-0.019	-0.08
			(0.440)	(1.610)
x Previous tenure between 2 and 5 years			0.06	0.062
			(1.210)	(1.430)
x Previous tenure over 5 years			-0.022	0.025
			(0.180)	(0.290)
x Current employer foreign				
x Previous tenure less than 2 years			0.032	0.022
			(1.060)	(0.870)
x Previous tenure between 2 and 5 years			0.022	0.02
			(0.600)	(0.640)
x Previous tenure over 5 years			-0.129	-0.169
			(1.380)	(2.21)*
x Current and previous employer foreign				
x Previous tenure less than 2 years			-0.02	0.067
			(0.250)	(0.900)
x Previous tenure between 2 and 5 years			0.043	-0.039
			(0.420)	(0.550)
x Previous tenure over 5 years			-0.066	0.103
			(0.270)	(0.680)

Table continues on next page

Table 7 Continued

Effects of tenure at current employer for all employees				
Current employer foreign	-0.009	0.025	0.001	0.042
	(0.760)	(2.18)*	(0.090)	(3.02)**
Current employer foreign				
x Tenure less than 2 years	0.018	-0.018	0.011	-0.031
	(2.66)**	(2.83)**	(1.530)	(4.07)**
x Tenure between 2 and 5 years	0.014	0.01	0.016	0.008
	(6.52)**	(5.93)**	(6.28)**	(4.38)**
x Tenure between 5 and 10 years	-0.001	-0.003	-0.008	-0.006
	(1.030)	(4.44)**	(5.91)**	(7.12)**
x Tenure over 10 years	-0.002	0	-0.001	0.001
	(4.97)**	(1.460)	(3.50)**	(3.16)**
Effects of tenure at current employer for the university educated				
University education				
x Current employer foreign			-0.032	-0.046
			(1.230)	(1.97)*
x Current employer foreign				
x Tenure less than 2 years			0.02	0.039
			(1.340)	(3.06)**
x Tenure between 2 and 5 years			-0.004	0.002
			(1.030)	(0.760)
x Tenure between 5 and 10 years			0.016	0.008
			(6.74)**	(5.15)**
x Tenure over 10 years			0.001	-0.002
			(1.350)	(5.00)**
Person fixed effects	No	Yes	No	Yes
Observations	974465	974465	974465	974465
R-squared	0.45	0.15	0.45	0.15
Number of individuals		141648		141648

Notes

1. The dependent variable is log real monthly earnings

2. Coefficients on the following variables are not reported: tenure, age (models 1 and 3), education dummies (models 1 and 3), gender dummy (models 1 and 3), time dummies, regional dummies, industry dummies, dummy for decreasing firm employment, firm size, sales/employee.

3. Robust t statistics in parentheses: * significant at 5%; ** significant at 1%

4. The R-squared reported for models 2 and 4 are for the "within-tranformed" estimation. Corresponding R-squared for these models estimated with individual dummy variables are 0.909 for both models.